Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended):

A network switch having a hybrid switch architecture, comprising:

at least two shared-memory switch fabrics, each shared-memory switch fabric being configured to store and retrieve packets; and

at least two crossbar switch fabrics, each crossbar switch fabric including

a plurality of ports for receiving packets from and transmitting packets to network connections, and

at least two channels, each of the channels coupled to one of the shared-memory switch fabrics such that each crossbar switch fabric is coupled to every shared-memory switch fabric,

each crossbar switch fabric ~~being coupled to each of the shared-memory switch fabrics and~~ configured to couple any one of the ports to any one of the channels to distribute packets from one of the network connections to any one of the shared-memory switch fabrics and to re-collect packets ~~to and~~ from ~~each~~ any one of the shared-memory switch fabrics to one of the network connections. ~~fabrics.~~

2. (currently amended):

The network switch of claim 1, wherein each shared-memory switch fabric is a NxN shared-memory switch fabric, N being an integer greater than 1, and wherein each shared-memory switch fabric includes N inputs for receiving packets and N outputs for sending packets on N channels and wherein at least one channel of each shared-memory switch fabric is coupled to one of the channels of each crossbar switch fabric.

3. (cancelled)

4. (currently amended):

The network switch of claim 1, ~~3,~~ wherein each crossbar switch fabric includes a number of channels that ~~n~~ is an integer multiple of a total number of ~~NxN~~ shared-memory switch ~~fabrics.~~ fabrics, the integer multiple being at least a factor of two.

5. (original):

The network switch of claim 4, comprising:

a first and second 48x48 shared memory switch fabrics; and

12 8x8 crossbar switch fabrics, each 8x8 crossbar switch fabric is coupled with 4 channels of the first and second 48x48 shared-memory switch fabrics.

6. (currently amended):

The network switch of claim 1, ~~3,~~ wherein the aggregate data rate on the ~~m~~ channels of each crossbar switch fabric is greater than the aggregate data rate on the ~~n~~ plurality of ports ~~for~~ of the ~~nxm~~ crossbar switch fabric. ~~fabrics.~~

7. (currently amended):

The network switch of claim 1, ~~5,~~ wherein the ~~NxN~~ connectivity for the shared-memory switch fabrics is greater than the ~~nxm~~ connectivity of the crossbar switch fabrics.

8. (original):

The network switch of claim 1, wherein each crossbar switch fabric is a 1xm crossbar switch fabric, m being an integer greater than one, and wherein each 1xm crossbar switch fabric includes 1 port for receiving and transmitting packets from and to a single network port and m channels for distributing and re-collecting packets to and from the shared-memory switch fabrics.

9. (original):

The network switch of claim 8, wherein m is an integer multiple of a total number of shared-memory switch fabrics.

10. (original):

The network switch of claim 9, comprising:

a first and second 48x48 shared-memory switch fabrics; and

12 1x8 crossbar switch fabrics, each 1x8 crossbar switch fabric is coupled with 4 channels of the first and second 48x48 shared-memory switch fabrics.

11. (currently amended):

The network switch of claim 1, further comprising:

a port controller coupled to each of the crossbar switch fabrics and configured to retrieve packets from at least one network port and to forward packets to the plurality of ports of the crossbar switch fabrics and configured to receive packets from the plurality of ports of the crossbar switch fabrics and to forward packets to a destination network component via the at least one network port. ~~port; and~~

~~a shared-buffer memory coupled to each of the shared-memory switch fabrics configured to store temporarily packets distributed from the crossbar switch fabrics.~~

12. (previously presented):

The network switch of claim 11, further comprising:

a notify ring coupled to each port controller, the notify ring configured to transfer forwarding information to each port controller, and wherein the forwarding information is used to request packets from the shared-memory switch fabrics by one of the port controllers.

13. (currently amended):

The network switch of claim 11, wherein each crossbar switch fabric is configured to distribute packets ~~directly, randomly, in a round-robin, or some other selective manner on an ingress path~~ from one of the plurality of ports of the crossbar switch fabrics to more than one of the shared-memory switch fabrics without reference to the final port destination of the packets. ~~such that the distributed packets are stored in the shared buffer memory.~~

14. (currently amended):

The network switch of claim 13, wherein each shared-memory switch fabric is configured to store and retrieve the distributed packets from the crossbar switch fabrics in ~~the~~ a shared buffer memory.

15. (original):

The network switch of claim 12, wherein each shared-memory switch fabric is also configured to send a packet buffer number indicating where a packet is stored in a shared buffer memory.

16. (currently amended):

The network switch of claim 15, wherein each port controller is also configured to generate the forwarding information based on the packet buffer number and a switch instance sent from each shared-memory switch fabric.

17. (original):

The network switch of claim 16, wherein each port controller is configured to request packets from each of the shared-memory switch fabrics using the forwarding information.

18. (original):

The network switch of claim 15, wherein packets are requested from each of the shared-memory switch fabrics based on an availability of a channel, and wherein the packets are capable of being requested in an order different from an order the packets were received by the crossbar switch fabrics.

19. (original):

The network switch of claim 18, wherein each crossbar switch on an egress path re-collects the requested packets and transmits the packets on egress ports in the order the requested packets were received by the crossbar switch on an ingress path before distribution.

20. (original):

The network switch of claim 18, wherein re-collected packets are stored in egress buffers, the re-collected packets are capable of being re-ordered in the egress buffers.

21. (original):

The network switch of claim 20, wherein each port controller includes:

an egress request queue storing requests to re-collect packets from the shared-memory switch fabrics, and wherein the requests are serviced based on an availability of a channel.

22. (original):

The network switch of claim 20, wherein each crossbar switch fabric further includes:

an ingress switching unit configured to receive packets and forward the received packets to channels coupled with the shared-memory switch fabrics; and

an egress switching unit configured to receive requested packets from the shared-memory switch fabrics and forward the requested packets to a port controller.

23. (original):

The network switch of claim 1, wherein the packets are data packets for an Ethernet network.

24. (original):

The network switch of claim 1, wherein the packets are data cells for an asynchronous transfer mode (ATM) network or for storage area network frames.

25-28. (cancelled)

29. (currently amended):

A method of using a network switch having a hybrid switch architecture, the method comprising:

distributing packets received from a network connection by ~~an ingress~~ one of a plurality of ports of a crossbar switch fabric to at least two shared-memory switch fabrics; and

storing the ~~distributed~~ packets distributed from the ~~ingress~~ crossbar switch fabric in a shared buffer memory associated with each shared-memory switch fabric.

30. (original):

The method of claim 29, further comprising:

removing header or control information from received packets before distribution.

31. (currently amended):

The method of claim 29, wherein distributing packets distributes packets ~~directly, randomly, in a round robin, or some other selective manner~~ from one of the plurality of ports of the crossbar switch fabrics to more than one of the shared-memory switch fabrics without reference to the final port destination of the packets. ~~fabrics.~~

32. (original):

The method of claim 29, further comprising:

sending a packet buffer number and a switch instance for each packet stored by each shared-memory switch fabric to an ingress port controller, the packet buffer number including information indicating where the packet is stored in the shared buffer memory and the switch instance including information which shared-memory switch fabric stored the packet.

33. (previously presented):

The method of claim 32, further comprising:

generating forwarding information using the packet buffer number and the switch instance; and

sending the forwarding information to an egress port controller via a notify ring.

34. (previously presented):

The method of claim 33, further comprising:

requesting packets from the shared-memory switch fabrics by an egress port controller using the forwarding information from the ingress port controller; and

re-collecting the requested packets from the shared-memory switch fabrics by the egress port controller.

35. (original):

The method of claim 34, further comprising:

retrieving the requested packets from the shared buffer memory by the shared-memory switch fabrics; and

transmitting the packets to a destination network component in an order the packets were received by the ingress port controller.

36. (previously presented):

The method of claim 30, further comprising:

requesting packets from the shared-memory switch fabrics by an egress port controller based on an availability of a channel regardless of an order the packets were received by an ingress port controller; and

re-collecting the requested packets by the egress port controller; and

re-ordering the re-collected packets such that packets are to be transmitted to a destination network component in an order the packets were received by the ingress port controller.

37. (cancelled)

38. (new):

A network switch having a hybrid switch architecture, comprising:

at least two shared-memory switch fabrics, each shared-memory switch fabric being configured to store and retrieve packets;

at least two crossbar switch fabrics, each crossbar switch fabric being coupled to each of the shared-memory switch fabrics and configured to distribute and re-collect packets to and from each of the shared-memory switch fabrics;

a port controller coupled to each of the crossbar switch fabrics and configured to retrieve packets from at least one network port and to forward packets to the crossbar switch fabrics and configured to receive packets from the crossbar switch fabrics and to forward packets to a destination network component via the at least one network port; and

a notify ring coupled to each port controller, the notify ring configured to transfer forwarding information to each port controller, and wherein the forwarding information is used to request packets from the shared-memory switch fabrics by one of the port controllers.

39. (new):

The network switch of claim 38, wherein each shared-memory switch fabric is also configured to send a packet buffer number indicating where a packet is stored in a shared buffer memory.

40. (new):

The network switch of claim 39, wherein packets are requested from each of the shared-memory switch fabrics based on an availability of a channel, and wherein the packets are capable of being requested in an order different from an order the packets were received by the crossbar switch fabrics.

41. (new):

The network switch of claim 39, wherein each port controller is also configured to generate the forwarding information based on the packet buffer number and a switch instance sent from each shared-memory switch fabric.

42. (new):

The network switch of claim 41, wherein each port controller is configured to request packets from each of the shared-memory switch fabrics using the forwarding information.

43. (new):

The network switch of claim 42, wherein each crossbar switch on an egress path re-collects the requested packets and transmits the packets on egress ports in the order the requested packets were received by the crossbar switch on an ingress path before distribution.

44. (new):

The network switch of claim 42, wherein re-collected packets are stored in egress buffers, the re-collected packets are capable of being re-ordered in the egress buffers.

45. (new):

The network switch of claim 44, wherein each port controller includes:

an egress request queue storing requests to re-collect packets from the shared-memory switch fabrics, and wherein the requests are serviced based on an availability of a channel.

46. (new):

The network switch of claim 44, wherein each crossbar switch fabric further includes:

an ingress switching unit configured to receive packets and forward the received packets to channels coupled with the shared-memory switch fabrics; and

an egress switching unit configured to receive requested packets from the shared-memory switch fabrics and forward the requested packets to a port controller.

47. (new):

A method of using a network switch having a hybrid switch architecture, the method comprising:

distributing packets received by an ingress crossbar switch fabric to at least two shared-memory switch fabrics; and

storing the distributed packets from the ingress crossbar switch fabric in a shared buffer memory associated with each shared-memory switch fabric; and

sending a packet buffer number and a switch instance for each packet stored by each shared-memory switch fabric to an ingress port controller, the packet buffer

number including information indicating where the packet is stored in the shared buffer memory and the switch instance including information which shared-memory switch fabric stored the packet.

48. (new):

The method of claim 47, further comprising:

removing header or control information from received packets before distribution.

49. (new):

The method of claim 47, wherein distributing packets distributes packets directly, randomly, in a round robin, or some other selective manner to the shared-memory switch fabrics.

50. (new):

The method of claim 47, further comprising:

generating forwarding information using the packet buffer number and the switch instance; and

sending the forwarding information to an egress port controller via a notify ring.

51. (new):

The method of claim 50, further comprising:

requesting packets from the shared-memory switch fabrics by an egress port controller using the forwarding information from the ingress port controller; and

re-collecting the requested packets from the shared-memory switch fabrics by the egress port controller.

52. (new):

The method of claim 51, further comprising:

retrieving the requested packets from the shared buffer memory by the shared-memory switch fabrics; and

transmitting the packets to a destination network component in an order the packets were received by the ingress port controller.

53. (new):

The method of claim 48, further comprising:

requesting packets from the shared-memory switch fabrics by an egress port controller based on an availability of a channel regardless of an order the packets were received by an ingress port controller; and

re-collecting the requested packets by the egress port controller; and

re-ordering the re-collected packets such that packets are to be transmitted to a destination network component in an order the packets were received by the ingress port controller.

54. (new):

A method of using a network switch having a hybrid switch architecture, the method comprising:

removing header or control information from packets received by an ingress crossbar switch fabric before distribution;

distributing received packets to at least two shared-memory switch fabrics;

storing the distributed packets from the ingress crossbar switch fabric in a shared buffer memory associated with each shared-memory switch fabric;

requesting packets from the shared-memory switch fabrics by an egress port controller based on an availability of a channel regardless of an order the packets were received by an ingress port controller;

re-collecting the requested packets by the egress port controller; and

re-ordering the re-collected packets such that packets are to be transmitted to a destination network component in an order the packets were received by the ingress port controller.

55. (new):

The method of claim 54, wherein distributing packets distributes packets directly, randomly, in a round robin, or some other selective manner to the shared-memory switch fabrics.

56. (new):

The method of claim 54, further comprising:

sending a packet buffer number and a switch instance for each packet stored by each shared-memory switch fabric to an ingress port controller, the packet buffer

number including information indicating where the packet is stored in the shared buffer memory and the switch instance including information which shared-memory switch fabric stored the packet.

57. (new):

The method of claim 56, further comprising:

generating forwarding information using the packet buffer number and the switch instance; and

sending the forwarding information to an egress port controller via a notify ring.

58. (new):

The method of claim 57, further comprising:

requesting packets from the shared-memory switch fabrics by an egress port controller using the forwarding information from the ingress port controller; and

re-collecting the requested packets from the shared-memory switch fabrics by the egress port controller.

59. (new):

The method of claim 58, further comprising:

retrieving the requested packets from the shared buffer memory by the shared-memory switch fabrics; and

transmitting the packets to a destination network component in an order the packets were received by the ingress port controller.

60. (new):

A network switch having a hybrid switch architecture, comprising:

at least two first switch means, each first switch means for storing and retrieving packets; and

at least two second switch means, each second switch means coupled to one of the first switch means such that each second switch means is coupled to every first switch means,

each second switch means

for receiving packets from any one of a plurality of ports included in the second switch means and distributing the received packets to any one of the first switch means, and

re-collecting packets from any one of the first switch means and transmitting the re-collected packets to any one of the plurality of ports.

61. (new):

The network switch of claim 60, wherein each first switch means includes N inputs for receiving packets and N outputs for sending packets on N channels.

62. (new):

The network switch of claim 60, further comprising:

controller means coupled to each of the second switch means

for retrieving packets from at least one network port and forwarding packets to the plurality of ports of the second switch means, and

for receiving packets from the plurality of ports of the second switch means and forwarding packets to a destination network component via the at least one network port.

63. (new):

The network switch of claim 62, further comprising:

notify means coupled to each controller means for transferring forwarding information to each controller means, wherein the forwarding information is used to request packets from the first switch means by one of the controller means.

64. (new):

The network switch of claim 62, wherein each crossbar switch fabric is configured to distribute packets from one of the plurality of ports of the crossbar switch fabrics to more than one of the first switch means without reference to the final port destination of the packets.

65. (new):

The network switch of claim 64, wherein each first switch means is further for storing and retrieving the distributed packets from the second switch means in a shared buffer memory.

66. (new):

The network switch of claim 63, wherein each first switch means is further for sending a packet buffer number indicating where a packet is stored in a shared buffer memory.

67. (new):

The network switch of claim 66, wherein each controller means is further for generating the forwarding information based on the packet buffer number and a switch instance sent from each first switch means.

68. (new):

The network switch of claim 67, wherein each controller means is further for requesting packets from each of the first switch means using the forwarding information.

69. (new):

The network switch of claim 66, wherein packets are requested from each of the first switch means based on an availability of a channel, and wherein the packets are capable of being requested in an order different from an order the packets were received by the second switch means.

70. (new):

A network switch having a hybrid switch architecture, comprising:

means for distributing packets received by an ingress crossbar switch fabric to at least two shared-memory switch fabrics; and

means for storing the distributed packets from the ingress crossbar switch fabric in a shared buffer memory associated with each shared-memory switch fabric; and

means for sending a packet buffer number and a switch instance for each packet stored by each shared-memory switch fabric to an ingress port controller, the packet buffer number including information indicating where the packet is stored in the shared buffer memory and the switch instance including information which shared-memory switch fabric stored the packet.

71. (new):

The network switch of claim 70, further comprising:

means for removing header or control information from received packets before distribution.

72. (new):

The network switch of claim 70, further comprising:

means for generating forwarding information using the packet buffer number and the switch instance; and

means for sending the forwarding information to an egress port controller via a notify ring.

73. (new):

The network switch of claim 72, further comprising:

means for requesting packets from the shared-memory switch fabrics by an egress port controller using the forwarding information from the ingress port controller; and

means for re-collecting the requested packets from the shared-memory switch fabrics by the egress port controller.

74. (new):

The network switch of claim 73, further comprising:

means for retrieving the requested packets from the shared buffer memory by the shared-memory switch fabrics; and

means for transmitting the packets to a destination network component in an order the packets were received by the ingress port controller.

75. (new):

The network switch of claim 71, further comprising:

means for requesting packets from the shared-memory switch fabrics by an egress port controller based on an availability of a channel regardless of an order the packets were received by an ingress port controller; and

means for re-collecting the requested packets by the egress port controller; and

means for re-ordering the re-collected packets such that packets are to be transmitted to a destination network component in an order the packets were received by the ingress port controller.

76. (new):

A network switch having a hybrid switch architecture, comprising:

means for removing header or control information from packets received by an ingress crossbar switch fabric before distribution;

means for distributing received packets to at least two shared-memory switch fabrics;

means for storing the distributed packets from the ingress crossbar switch fabric in a shared buffer memory associated with each shared-memory switch fabric;

means for requesting packets from the shared-memory switch fabrics by an egress port controller based on an availability of a channel regardless of an order the packets were received by an ingress port controller;

means for re-collecting the requested packets by the egress port controller; and

means for re-ordering the re-collected packets such that packets are to be transmitted to a destination network component in an order the packets were received by the ingress port controller.

77. (new):

The network switch of claim 76, further comprising:

means for sending a packet buffer number and a switch instance for each packet stored by each shared-memory switch fabric to an ingress port controller, the packet buffer number including information indicating where the packet is stored in the shared buffer memory and the switch instance including information which shared-memory switch fabric stored the packet.

78. (new):

The network switch of claim 77, further comprising:

means for generating forwarding information using the packet buffer number and the switch instance; and

means for sending the forwarding information to an egress port controller via a notify ring.

79. (new):

The network switch of claim 78, further comprising:

means for requesting packets from the shared-memory switch fabrics by an egress port controller using the forwarding information from the ingress port controller; and

means for re-collecting the requested packets from the shared-memory switch fabrics by the egress port controller.

80. (new):

The network switch of claim 79, further comprising:

means for retrieving the requested packets from the shared buffer memory by the shared-memory switch fabrics; and

means for transmitting the packets to a destination network component in an order the packets were received by the ingress port controller.